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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPELLANT'S MAIN BRIEF ON APPEAL

APPELLANTS: Masanori Iwasaki OLD DOCKET NO.: P99,0922
NEW DOCKET NO: 09792909-4267
SERIAL NO.: 09/362,058 GROUP ART UNIT: 2613
FILING DATE: July 28, 1999 EXAMINER: Richard J. Lee
INVENTION: "THREE-DIMENSIONAL IMAGE-CAPTURING APPARATUS"

Mail Stop Appeal Brief - Patents
Hon. Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Dear Sir:

Appellant submits herewith Appellant's Main Brief on Appeal under 37 C.F.R. §41.37 in support of the Notice of Appeal mailed on September 25, 2005. The Commissioner is hereby authorized to charge the amount of \$500.00 for the requisite filing fee for filing the Main Brief on Appeal to the Appellants' Attorneys' credit card. Form 2038 is attached.

Appellant petitions the Commissioner of Patents and Trademarks to extend the time for filing this brief for three months so that the period for filing is extended to February 25, 2006. Postal money order nos. 05456144968 and 05456144957 in the total amount of \$1020.00 are enclosed for the three-month extension fee.

The Commissioner is hereby authorized to charge any deficiency in fees associated with this communication or credit any overpayment to Deposit Account No. 19-3140. A duplicate copy of this sheet is enclosed.

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02 FC:1253 1020.00 OP



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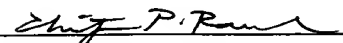
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Respectfully Submitted,

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CERTIFICATE OF MAILING

I hereby certify that this original and two copies of this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on February 27, 2006.

 (Reg. No. 45,034)
Christopher P. Rauch



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Dear Sir:

In accordance with the provisions of 37 C.F.R. §41.37, Appellant submits this Main Brief on Appeal pursuant to the Notice of Appeal filed on September 25, 2005 in the above-identified application.

I. REAL PARTY IN INTEREST:

The real party in interest in the present appeal is the Assignee, Sony Corporation. The assignment was recorded in the U.S. Patent and Trademark Office at Reel 010311, Frame 0371.

II. RELATED APPEALS AND INTERFERENCES:

Appellant is not aware of any related appeals or interferences.

III. STATUS OF CLAIMS:

Claims 1, 2, 5, and 6 are pending in the application. The present appeal is directed to claims 1, 2, 5, and 6, which were finally rejected in an Office Action dated July 25, 2005. A copy of claims 1, 2, 5, and 6 is appended hereto as the Claims Appendix.

The status of the claims on appeal is as follows:

Claims 1, 2, and 5 are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over *Moreton, et al.* (U.S. Patent No. 5,835,133) in view of *Ishihara, et al.* (U.S. Patent No. 5,737,084) and further in view of *Kobu, et al.* (Japanese No. JP-60037520) and further in view of *Suzuki, et al.* (U.S. Patent No. 6,437,824).

Claim 6 is rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over *Moreton, et al.* (U.S. Patent No. 5,835,133) in view of *Ishihara, et al.* (U.S. Patent No. 5,737,084) and further in view of *Kobu, et al.* (Japanese No. JP-60037520) and further in view of *Suzuki, et al.* (U.S. Patent No. 6,437,824) and further in view of *Tabata, et al.* (U.S. Patent No. 6,177,952).

IV. STATUS OF AMENDMENTS:

All amendments have been entered in this application.

V. SUMMARY OF CLAIMED SUBJECT MATTER:

The claimed invention relates to a device that captures different images of a subject simultaneously on a single solid-state image-sensing device. (

Independent claim 1

Referring to Appellant's Figure 1 for illustrative purposes, independent claim 1 claims a three-dimensional image-capturing apparatus (including elements 1-7 of Figure 1). (Page 2, lines 11-14). A single solid-state image-sensing device 1 has a plurality of image capturing regions 1a and 1b. (Page 9, lines 2-4). Each image capture region 1a and 1b simultaneously captures a different image on the single solid-state image-sensing device 1. (Page 10, lines 14-20).

A plurality of optical systems (elements 2-6 of Figure) form a different image of a subject in each image-capturing region 1a and 1b. (Page 9, lines 2-15). Each one of the optical systems corresponds to a different one of the image-capturing regions 1a and 1b. (*Id.*) For example, as shown in Figures 2a and 2b, each optical systems forms a different image of the subject. The optical systems form, in the corresponding image-capturing regions 1a and 1b, separate and

different images of the subject which are captured from different viewpoints having a distance therebetween. (Page 10, lines 14-20).

Each of the optical systems comprises:

- An imaging-side reflection means 5a or 5b that is located in front of the corresponding image-capturing region 1a or 1b and directed in an obliquely outward direction. (Page 9, lines 9-15).

- A subject-side reflection means 6a or 6b that is located outward from the imaging-side reflection means 5a or 5b and directed in an obliquely inward direction. (*Id.*)

- A lens 3a or 3b is provided in an optical path between the imaging-side reflection means 5a or 5b and the single solid-state image-sensing device 1. (Page 9, lines 6-7).

- A light-limiting means 4a or 4b is provided in an optical path between the imaging-side reflection means 5a or 5b and the lens 4a or 4b. The light-limiting means prevents incidence of flux of ambient light other than from rays forming each image of the subject. (Page 9, lines 8-12).

- An infrared cut filter 2 is provided in an optical path between the lens and the single solid-state image-sensing device 1. (Page 9, line 7).

A light-shielding means 7 is provided normal to the single solid-state image-sensing device 1 and at least between the single solid-state image-sensing device 1 and the imaging-side reflection means 5a and 5b so as to prevent optical cross talk between the optical systems. (Page 9, lines 15-23).

Claims 5 and 6 depend from claim 1.

Independent claim 2

Independent claim 2 relates to a stereo-camera recording/reproducing system that comprises elements similar to those claimed in claim 1.

VI. GROUND S OF REJECTION TO BE REVIEWED ON APPEAL:

A. Claims 1, 2, and 5 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over *Moreton, et al.* (U.S. Patent No. 5,835,133) in view of *Ishihara, et al.* (U.S. Patent No. 5,737,084) and further in view of *Kobu, et al.* (Japanese No. JP-60037520) and further in view of *Suzuki, et al.* (U.S. Patent No. 6,437,824).

B. Claim 6 stands rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over *Moreton, et al.* (U.S. Patent No. 5,835,133) in view of *Ishihara, et al.* (U.S. Patent No. 5,737,084) and further in view of *Kobu, et al.* (Japanese No. JP-60037520) and further in view of *Suzuki, et al.* (U.S. Patent No. 6,437,824) and further in view of *Tabata, et al.* (U.S. Patent No. 6,177,952).

VII. ARGUMENT:

Claims 1, 2, 5, and 6 stand rejected under 35 U.S.C. §103 by the Examiner as being unpatentable based on various references. As set forth more clearly below, the rejections of the claims set forth by the Examiner under §103 are improper and accordingly the Board should reverse these rejections.

A. Claims 1, 2, and 5 are not unpatentable under 35 U.S.C. §103(a) based on the teachings of *Moreton* in view of *Ishihara* and further in view of *Kobu* and further in view of *Suzuki*

Appellant respectfully submits that the Examiner's assertions are incorrect as a matter of fact and law. Thus, for the reasons set forth below, Appellant respectfully requests that this Board reverse the rejection of claims 1, 2, and 5 under 35 U.S.C. §103(a) as being allegedly unpatentable based on the teachings of *Moreton* in view of *Ishihara* and further in view of *Kobu* and further in view of *Suzuki*.

1. *Moreton* in view of *Ishihara* fails to disclose or suggest a plurality of optical systems that each have a light-limiting means provided in an optical path between an imaging-side reflection means and a lens

Moreton fails to disclose a light-limiting means and *Ishihara* fails to even relate to a plurality of optical systems. Appellant's claimed invention includes a plurality of optical systems that each corresponds to an image-capturing region of a single solid-state image-sensing device. *In each optical system*, there is an optical path between an imaging-side reflection means and the image-capturing region for that optical system. *In each optical system*, the optical path comprises, in order, the imaging-side reflection means, a light-limiting means, a lens, and then the image-capturing region. Thus, *each optical system* includes a light-limiting means between the imaging-side reflection means and the lens.

As acknowledged by the Examiner, *Moreton* fails to teach Appellant's claimed light-limiting means. (Office Action of 7/25/2005, page 3). *Moreton* teaches a plurality of optical systems, yet none of its optical systems has a light-limiting means. Further, *Moreton* teaches using a single common lens for all of its optical systems, instead of a lens for each optical system. (See, e.g., *Moreton* Figure 2A). Therefore, the Examiner combines *Moreton* with *Ishihara*. However, Appellant respectfully submits that the combined references still fail to disclose or suggest Appellant's claimed light-limiting means provided in each of a plurality of optical systems.

As described above, *Moreton* fails to disclose a lens for each optical system, and instead discloses a single common lens for all of its optical systems. (See, *Moreton* Figure 2A item 45). It would not make sense to include two light-limiting means in *Moreton* (i.e. one for each image-capturing region), because this would block the light coming to *Moreton*'s single common lens. And if a single light-limiting means is added to *Moreton*, this fails to teach Appellant's claimed light-limiting means and lens provided in each of a plurality of optical systems. Therefore, Appellant submits that *Moreton* teaches away from using a different lens and light-limiting means for each optical system.

Ishihara teaches using a light-limiting means prior to a lens, however, *Ishihara* fails to even relate to a device that includes a plurality of optical systems for different image-capturing regions. Instead, *Ishihara* relates to a shape measuring apparatus that includes a *single* optical system, not a plurality of optical systems. (See, e.g., *Ishihara* Figure 5). Referring to *Ishihara* Figure 5, *Ishihara* teaches a single optical system for a single photoelectric sensor 25 (image capture device). A diaphragm 12 is positioned between a lens 23 and a reflective device 21. Light travels along a single optical path via the single optical system to the photoelectric sensor 25.

Therefore, *Moreton* teaches away from using a different lens and light-limiting means for each of its optical system. And *Ishihara* fails to even relate to a device that includes a plurality of optical systems. Therefore, Appellant submits that one having skill in the art would not have been motivated to combine *Ishihara*'s light-limiting means with *Moreton*'s device, because *Moreton* teaches away from this combination. Further, *Ishihara* provides no motivation for this combination, because *Ishihara* fails to even relate to a device that includes a plurality of optical systems.

Thus, contrary to the Examiner's arguments, *Moreton* in view of *Ishihara* fails to disclose or suggest Appellant's claimed light-limiting means in each of a plurality of optical systems.

2. *Moreton* in view of *Suzuki* fails to disclose or suggest Appellant's claimed device having an infrared cut filter

Moreton fails to disclose an infrared cut filter and *Suzuki* fails to even relate to a multi-image capturing device. As acknowledged by the Examiner, *Moreton* fails to teach Appellant's claimed infrared cut filter. (Office Action of 7/25/2005, page 3). Therefore, the Examiner combines *Moreton* with *Suzuki*. However, Appellant respectfully submits that the combined references still fail to disclose or suggest Appellant's claimed device having an infrared cut filter.

Appellant's claimed invention includes a single solid-state image-sensing device that has a plurality of image-capturing regions. Each image-capturing region simultaneously captures a different image on the single solid-state image-sensing device. Each image capturing region is associated with an optical system for forming a different image of a subject in each image-capturing region.

This is clearly unlike *Suzuki*, which fails to even relate to a multi-image capturing device. *Suzuki* relates to an image pickup system that merely captures a single image via a single optical system (e.g., a common digital camera). Referring to *Suzuki* Figure 7, *Suzuki* receives a single image via a zoom lens 3010 and captures the image on a charge coupled device (CCD) 3013, which only has one image capture region.

Accordingly, *Suzuki* also fails to relate to *Moreton*, which teaches a multi-image capturing device. Therefore, Appellant submits that one having skill in the art would not have been motivated to combine *Suzuki*'s infrared cut filter with *Moreton*'s device, because *Suzuki* fails to relate to a multi-image capturing device. Further, *Moreton* provides no motivation for this combination, because *Moreton* fails to suggest the use of an infrared cut filter.

Thus, contrary to the Examiner's arguments, *Moreton* in view of *Ishihara*, *Kobu*, and *Suzuki* fails to disclose or suggest Appellant's claimed device having an infrared cut filter.

3. ***Moreton* in view of *Ishihara*, *Kobu*, and *Suzuki* fails to disclose or suggest the claimed invention**

Appellant respectfully submits that the Examiner has used impermissible hindsight to pick and choose individual elements from no less than four unrelated references in an attempt to arrive at Appellant's claimed invention. As discussed above, there was no motivation to combine *Moreton* with *Ishihara* or *Suzuki*. Since there was no motivation to combine these references, there was no suggestion to combine their individual elements. Accordingly, after reading Appellant's various claim limitations, the Examiner has used

impermissible hindsight in an attempt to argue that one having skill in the art would have been motivated to combine individual elements from the multiplicity of unrelated references arrive at Appellant's claim limitation.

Thus, *Moreton* in view of *Ishihara*, *Kobu*, and *Suzuki* fails to disclose or suggest the claimed invention.

Appellants respectfully request that the Board reverse the rejection of claims 1, 2, and 5.

B. Claim 6 is not unpatentable under 35 U.S.C. §103(a) based on the teachings of *Moreton* in view of *Ishihara* and further in view of *Kobu* and further in view of *Suzuki* and further in view of *Tabata*

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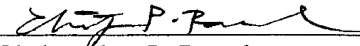
As discussed above, *Moreton* in view of *Ishihara*, *Kobu*, and *Suzuki* fails to disclose or suggest Appellant's claimed device having a light-limiting means and infrared cut filter. *Tabata* fails to discuss a light-limiting means or an infrared cut filter. Therefore, *Moreton* in view of *Ishihara* and further in view of *Kobu* and further in view of *Suzuki* and further in view of *Tabata* fails to disclose or suggest the claimed invention.

Appellants respectfully request that the Board reverse the rejection of claim 6.

VIII. CONCLUSION:

For the foregoing reasons, Appellants respectfully submit that the rejections posed by the Examiner are improper as a matter of law and fact. Accordingly, Appellants respectfully request the Board reverse the rejections of claims 1, 2, 5, and 6.

Respectfully submitted,

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CLAIMS APPENDIX

1. A three-dimensional image-capturing apparatus comprising:
 - a single solid-state image-sensing device having a plurality of image capturing regions, each image capture region simultaneously captures a different image on the single solid-state image-sensing device;
 - a plurality of optical systems for forming a different image of a subject in each image-capturing region, each one of the optical systems corresponding to a different one of the image-capturing regions, each optical system having:
 - an imaging-side reflection means located in front of the corresponding image-capturing region and directed in an obliquely outward direction;
 - a subject-side reflection means located outward from said imaging-side reflection means and directed in an obliquely inward direction;
 - a lens provided in an optical path between said imaging-side reflection means and said single solid-state image-sensing device;
 - a light-limiting means provided in an optical path between said imaging-side reflection means and said lens, the light-limiting means preventing incidence of flux of ambient light other than from rays forming each image of said subject; and
 - an infrared cut filter provided in an optical path between said lens and said single solid-state image-sensing device; and
 - a light-shielding means provided normal to the single solid-state image-sensing device and at least between the single solid-state image-sensing device and the imaging-side reflection means so as to prevent optical cross talk between the optical systems,
 - wherein the optical systems are used to form, in the corresponding image-capturing regions, separate and different images of said subject which are captured from different viewpoints having a distance therebetween.
2. A stereo-camera recording/reproducing system comprising:
 - a single solid-state image-sensing device having a plurality of image capturing regions, each image capture region simultaneously captures a different image on the single solid-state image-sensing device;

a plurality of optical systems for forming a different image of a subject in each image-capturing region, each one of the optical systems corresponding to a different one of the image-capturing regions, each optical system having:

an imaging-side reflection means located in front of the corresponding image-capturing region and directed in an obliquely outward direction;

a subject-side reflection means located outward from said imaging-side reflection means and directed in an obliquely inward direction;

a lens provided in an optical path between said imaging-side reflection means and said single solid-state image-sensing device;

a light-limiting means provided in an optical path between said imaging-side reflection means and said lens, the light-limiting means preventing incidence of flux of ambient light other than from rays forming each image of said subject; and

an infrared cut filter provided in an optical path between said lens and said single solid-state image-sensing device; and

a light-shielding means provided normal to the single solid-state image-sensing device and at least between the single solid-state image-sensing device and the imaging-side reflection means so as to prevent optical cross talk between the optical systems,

wherein the optical systems are used to form, in the corresponding image-capturing regions, separate and different images of said subject which are captured from different viewpoints having a distance therebetween.

5. A three-dimensional image-capturing apparatus according to Claim 1, further comprising a signal processing means for dividing a video signal from said single solid-state image-sensing device into video signals representing the different images of said subject captured in the image-capturing regions for capturing images of said subject from the different viewpoints.

6. A three-dimensional image-capturing apparatus according to Claim 1, wherein parallax which is the distance between the viewpoints is one centimeter or greater.

EVIDENCE APPENDIX

Appellants do not submit extraneous evidence with this Main Brief on Appeal.

RELATED PROCEEDINGS APPENDIX

Appellants are not aware of any related appeals or interferences with regard to the present application.